Changing epidemiology of adult fractures in Scotland

**Aims and Objectives**
- Compare fracture incidence in two similar populations 50-60 years apart.
- Analyse causes of different fracture types.

**Population**
Fracture patients in Edinburgh who were over 35 years of age, between September 2010 and August 2011.
Fracture patients in Dundee and Oxford in 1954 to 1958.

**Study design**
Observational study

**Size of study**
In the 5 years of 1954 to 1958, 4173 fractures were analysed. 1889 (45.3%) occurred in males and 2284 (54.7%) in females. In 2010 to 2011, 4755 fractures were analysed. 1671 (35.1%) occurred in males and 3084 (64.9%) in females.

**Comparability of groups**
This study only analysed fractures that the previous study also had data for i.e. patients > 35 years of age, the fracture.
Where possible, results from Dundee rather than Oxford were used as the proximity and industrial background suggests that these populations would be more similar.

**Outcome measure**
The incidence of different fractures in the two time periods, in males and females of different ages.

**Main results**
- Incidence of fractures increased by 50% between the two time periods: increase in incidence in males was 5% but 85% in females.
- Increased incidence of fall-related fractures in all age groups in both males and females.

**Males:** fracture incidences were approximately the same in both time periods but in 2010-2011, a steep rise in incidence led to the 85+ years age group having an incidence 133% higher than in the 50s.

**Females:** in 2010-2011 the fracture incidence was greater in all age groups.
In both males and females in 2010-2011, the incidence of fractures tended to rise earlier than in the 50s. In the recent data, incidence was found to rise in the 65-74-year group, but in the 50s, incidence rose in the 75-84-year group.

Marked increase in all fragility fractures, with an increase of 39-400% in males and 71-1500% in females. In the commoner fragility fractures of the proximal humerus, distal radius and proximal femur, the increased incidence in males and in females was 123% and 97% respectively.
In males there has been a reduction in incidence in fractures of the carpus, finger phalanges, distal femur, patella, tarsus and toe phalanges. In females, there is a reduced incidence of tarsal fractures, toe phalangeal fractures and fractures of the tibia and fibula.

Causes of fracture
In the previous study, it was found that falls caused 52.5% of all fractures analysed (29.9% of fractures in men were caused by a fall, and 71.2% in women). In 2010/2011, 80.8% of fractures were caused by a fall (62.5% of fractures in males and 91% of fractures in females).

Source of bias
This study was conducted in a way that was similar to Knowleden et al.’s study in order to ensure comparability between the two populations.

Final comments
Edinburgh was chosen to be studied, rather than Dundee but some measures were taken to improve comparability. The study suggests that trends in fracture incidence reflects social change, for example the considerable increase in fracture incidence in females in the 35-44 age group, which could be a reflection of the increase in number of females in the workforce. In males, the increase in incidence starts later and reflects the greater life expectancy of males in 2010-2011. In 2010-2011, fall-related fractures have a higher prevalence in the 35-44-year group compared with this age group in the 50s. The study suggests the possibility of increased osteopenia now compared with the past, or because there is now more obesity, middle-aged adults are less fit than their predecessors.

Overall, there are now more fragility and non-fragility fractures in both males and females, and the prevalence of fall-related fractures is rising in all age groups.